

Four Frames Spatial Reasoning Observations

Belonging and Contributing

- 1.2 - Listen and respond to others, both verbally and non-verbally
- 4.1 - Use a variety of strategies to solve problems, including problems arising in social situations (e.g., trial and error, checking and guessing,- looking ahead and back to find material to add or remove)
- 25.3 - Express their thoughts and share experiences

Self-Regulation and Well-Being

- 1.6 - Use language (verbal and non-verbal) to communicate their thinking, to reflect, and to solve problems]
- 2.3 - Demonstrate self-motivation, initiative, and confidence in their approach to learning by selecting and completing learning tasks
- 2.5 - Develop empathy for others, and acknowledge and respond to each others' feelings
- 3.1 - Act and talk with peers and adults by expressing and accepting positive messages
- 3.2 - Demonstrate the ability to take turns during activity and discussions
- 4.1 - Use a variety of strategies to solve problems, including problems arising in social situations (e.g., trial and error, checking and guessing,- looking ahead and back to find material to add or remove)
- 20.1 - Demonstrate an understanding of number relationships for the numbers 0 through 10, through investigations
- 20.4 - Build three-dimensional structures using a variety of materials and identify the three-dimensional figures their structure contains

Demonstrating Literacy and Mathematics Behaviours

- 1.2 - Listen and respond to others, both verbally and non-verbally
- 1.3 - Use and interpret gestures, tone of voice, and other non-verbal means to communicate and respond
- 1.5 - Use language (verbal and non-verbal communication) in various contexts to connect new experiences with what they already know
- 1.6 - Use language(verbal and non-verbal communication) to communicate their thinking, to reflect, and to solve problems
- 1.7 - Use specialized vocabulary for a variety of purposes
- 15.3 - Make use of one-to-one correspondence in counting objects and matching groups of objects
- 15.4 - Demonstrate an understanding of the counting concepts of stable order (i.e., The concept that the counting sequence is always the same - 1 is followed by 2, 2 by 3, and so on) and of order irrelevance
- 15.5 - Subitize quantities to 5 without having to count, using a variety of materials and strategies
- 15.9 - Compose and decompose quantities to 10
- 17.1 - Explore, sort, and compare the attributes and the properties of traditional and non-traditional two-dimensional and three-dimensional figures

- 17.2 - Communicate an understanding of basic spatial relationships in their conversations and play, in their predictions and the visualizations, and during transitions and routines
- 20.1 - Demonstrate an understanding of number relationships for the numbers 0 through 10, through investigations
- 20.3 - Compose pictures, designs, shapes, and patterns, using two-dimensional shapes; predict and explore reflective symmetry in two-dimensional shapes; and decompose two-dimensional shapes into smaller shapes and rearrange the pieces into other shapes, using various tools and materials
- 20.4 - Build three-dimensional structures using a variety of materials and identify the three-dimensional figures their structure contains

Problem and Innovating

- 1.2 - Listen and respond to others, both verbally and non-verbally
- 1.4 - Sustain interactions in different contexts
- 1.5 - Use language (verbal and non-verbal communication) in various contexts to connect new experiences with what they already know
- 1.6 - Use language (verbal and non-verbal communication) to communicate their thinking, to reflect, and to solve problems
- 1.7 - Use specialized vocabulary for a variety of purposes
- 4.1 - Use a variety of strategies to solve problems, including problems arising in social situations (e.g., trial and error, checking and guessing,- looking ahead and back to find material to add or remove)
- 13.2 - Make predictions and observations before and during investigations
- 13.3 - Select and use materials to carry out explorations
- 20.1 - Demonstrate an understanding of number relationships for the numbers 0 through 10, through investigations
- 20.3 - Compose pictures, designs, shapes, and patterns, using two-dimensional shapes; predict and explore reflective symmetry in two-dimensional shapes; and decompose two-dimensional shapes into smaller shapes and rearrange the pieces into other shapes, using various tools and materials
- 20.4 - Build three-dimensional structures using a variety of materials and identify the three-dimensional figures their structure contains
- 24.2 - Start problems and pose questions as part of the process of creating and designing
- 24.4 - Select and use tools, equipment, and materials to construct things

*Research indicates that supporting the development of young children's mathematical knowledge plays a crucial role in their long-term success in school. In 2007, it was found that mathematics skills among children in Kindergarten were the best predictor of later school achievement, regardless of gender or socio-economic status (Duncan et al., 2007). Further studies confirm this finding (Claessens, Duncan, & Engel, 2009; Claessens & Engel, 2011), and additional work regarding the specific skills needed to be successful indicates that spatial thinking skills and geometric reasoning play a critical role in the development of problem-solving skills, mathematical learning, and reading comprehension (Clements & Sarama, 2011; Wheatley, Brown, & Solano, 1994; Casey et al., 2008).

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